

**MEETING MINUTES**  
**LIGNITE RESEARCH COUNCIL**  
**October 30, 2001**  
**Radisson Inn, Bismarck, ND**

**MEMBERS (or their authorized alternates) PRESENT:**

Dick Bergstad, International Brotherhood of Electrical Workers (I.B.E.W. # 714)  
John Bluemle, North Dakota Geographical Survey  
Randy Christmann, State Senator  
John Dwyer, Lignite Research Council  
Layton Freborg, State Senator  
Terry Hildestad, Knife River Corporation  
Carlyle Hillstrom, North Dakota Farm Bureau  
Steve Hovey, BNI Coal, Ltd.  
Marlowe Johnson, Otter Tail Power Co.  
Mike Jones, Energy & Environmental Research Center  
Doug Kane, MDU Resources Group  
Bruce J. Kopp, Xcel Energy, Inc.  
Vernon Laning, Basin Electric Power Cooperative  
David Loer, Minnkota Power Cooperative  
Al Lukes, Dakota Gasification Company  
Dean Peterson, The North American Coal Corporation  
Lee Peterson, North Dakota Department of Commerce  
Francis Schwindt, North Dakota Department of Health  
Steve Sherner, Minnesota Power  
Wilfred Volesky, Coal Conversion Counties Association  
Susan Wefald, North Dakota Public Service Commission  
John Weeda, Great River Energy  
John Wimer, National Energy Technology Laboratory

**OTHERS PRESENT:**

David Allard, Lignite Energy Council  
Jeff Burgess, Lignite Vision 21 Program  
Jim Deutsch, North Dakota Public Service Commission  
Karlene Fine, North Dakota Industrial Commission  
Bruce Folkedahl, Energy & Environmental Research Center  
Vicki Gilmore, Lignite Energy Council  
John Graves, Minnkota Power Cooperative  
Bob Jaeger, Westmoreland Coal Company  
Luther Kvernen, Minnkota Power Cooperative  
Michael Lepchitz, Westmoreland Coal Company  
Carmen Miller, North Dakota Attorney General's Office  
John O'Laughlin, Dakota Westmoreland Corporation  
Clifford R. Porter, Lignite Research Council  
Tony Rude, Lignite Vision 21 Program  
Chris Seglem, Westmoreland Coal Company  
Bob Slettehaugh, Black & Veatch  
Mark Strohfus, Great River Energy  
Rich Voss, Great Northern Power Development L.P.

Lignite Research Council (LRC) vice-chairman Doug Kane called the LRC meeting to order on October 30, 2001 at Radisson Inn, Bismarck, North Dakota.

### **Financial Summary as of October 16, 2001**

Clifford Porter, technical advisor for the LRC, summarized the North Dakota Lignite Research, Development and Marketing Program financial information that is available on the North Dakota Industrial Commission's (NDIC) web site. As of October 16, 2001, available fund balances from the Lignite Research Fund for the 2001-2003 biennium were as follows: \$100,000 in non-matching funds for lignite marketing feasibility studies, \$1,155,256 in uncommitted funds for small research projects, \$4,048,043 for demonstration projects, and \$155,000 for the joint program with the U. S. Department of Energy, Electric Power Research Institute and other entities.

### **Approval of September 7, 2001 LRC Minutes**

Kane asked for a motion to approve the minutes of the September 7, 2001 LRC meeting. Vernon Laning so moved; seconded by Mike Jones. Motion carried.

### **Lignite Research, Development and Marketing Program Updates**

Porter said that in the lignite marketing feasibility studies (LMFS) area, there is currently one Lignite Vision 21 (LV21)-related project from the 1999-2001 biennium funds. This is project LMFS-00-34, titled "Lignite Vision 21 Project - Phase II Project Marketing and Development". For 2001-2003, the NDIC has approved \$1.2 million for the Lignite Energy Council's new LMFS project (LMFS-02-35) titled "Lignite Vision 21 Program - Phase III: Program Management and Development of Lignite Vision 21 Projects", through which the Lignite Energy Council will help manage the LV21 Program contracts and assist LV21 participants. This management team consists of the NDIC's technical advisor, Clifford Porter, with assistance from Tony Rude, manager of transmission services and Jeff Burgess, manager of environmental services.

Of the 13 small research projects active during the 2001-2003 biennium, 12 of the projects' funding was committed prior to the 2001-2003 biennium and one project (FY02-XLII-108) has been approved in the 2001-2003 biennium. Funding from the Lignite Research Fund for these projects is \$2,264,147. Total project costs are \$7,604,373. The funding ratio is \$1 in state dollars for \$3.4 dollars of total project costs.

In the joint program, there is one project (FY01-XXXVII-103) that received a \$95,000 commitment from the Lignite Research Fund. Total project cost is \$190,000.

There are currently four active demonstration projects. The one non-LV21 project concerns production of a gypsum plant at Coal Creek Station. The three LV21-related projects are: Great River Energy's Lignite Vision 21 project, Montana-Dakota Utilities Company/Westmoreland Coal Company's Lignite Vision 21 project for Gascoyne, ND, and Great Northern Properties' Lignite Vision 21 feasibility project.

### **Grant Round XLIV Grant Applications**

Porter said that three of the six proposals that were to be considered were withdrawn prior to this meeting. The three withdrawn proposals are LRC-XILV-A ("Lignite Vision 21 Project - Dakota Gasification Company Ethanol"; submitted by Dakota Gasification Company), LRC-XLIV-B ("Anaerobic Treatment of Dakota Gasification Company Stripped Gas Liquor"; submitted by Energy & Environmental Research Center), and LRC-XLIV-E ("Roller Compacted Concrete Utilizing High Levels of Bottom Ash and Fly Ash"; submitted by Great River Energy).

The three proposals considered at this meeting are LRC-XLIV-C, LRC-XLIV-D and LRC-XLIV-F:

### **LRC-XLIV-C - "Biomass Impacts on SCR Performance"; Submitted by: Energy & Environmental Research Center; Principal Investigator: Bruce Folkedahl, Ph.D.; Request for: \$120,000; Total Project Costs: \$400,000; Time Frame: 24 Months.**

Porter said that the objective of the project is to determine fundamental mechanism of NO<sub>x</sub> reduction and blinding of selective catalytic reduction (SCR) catalysts using biomass and low-rank lignite coal constituents. Specific objectives are an assessment of candidate biomass fuels and coals for testing; conducting bench or pilot scale and field testing to determine NO<sub>x</sub> reduction mechanisms and SCR catalysts blinding during biomass/coal cofiring; identifying SCR blinding mechanisms; and development of a database. The project proposes the use of biomass high in ammonium

phosphates, such as poultry or turkey manure, be evaluated for use as a reducing source for the NO<sub>x</sub>. The project is proposed as an industry/U. S. Department of Energy/Energy & Environmental Research Center/NDIC consortium.

Porter summarized the ratings and comments of the four technical peer reviewers for proposal LRC-XLIV-C. They gave the proposal an average weighted score of 174.3 out of 250 points. Three reviewers recommended that the project be funded; one reviewer recommended it not be funded. As technical advisor to the LRC, Porter recommended the project be funded. He said that the project offers a unique opportunity to evaluate SCR nitrogen oxides using high ammonia biomass in cofiring combustion systems. He said he has reservations concerning the commercial viability of large-scale biomass cofiring and biomass cofiring for NO<sub>x</sub> reduction with North Dakota lignite. However, the project can provide valuable information on the NO<sub>x</sub> reduction and catalyst blinding that will be important to future North Dakota lignite facilities.

At the request of Susan Wefald, Porter explained the term “blinding” as it pertains to selective catalytic reduction.

Porter said that the Energy & Environmental Research Center is the conflict-of-interest party for proposal LRC-XLIV-C.

The proposal’s principal investigator, Bruce Folkedahl, gave a slide presentation in support of the proposal.

**LRC-XLIV-D – “Center for Air Toxics Metals Affiliates Program – Continuation of Membership”; Submitted by: Energy & Environmental Research Center; Principal Investigator: John Pavlish; Request for: \$75,000; Total Project Costs: \$3,750,000; Time Frame: 36 Months.**

Porter said that the overall goal of the proposal is continued membership in the Center for Air Toxics Metals (CATM) affiliates program for three additional years. The Industrial Commission has participated in the CATM program since 1995. The current CATM focus is to further the understanding of the behavior of potentially toxic metals in coal-fired utilities, other fossil fuel systems, waste-to-energy systems, and waste incinerators. CATM goals are to develop methods to prevent or reduce air toxic metal emissions, predict the fate of metals, determine the effectiveness of control devices, identify new control technologies, and inform affiliate members and the public of research findings.

Porter summarized the ratings and comments of the three technical peer reviewers for proposal LRC-XLIV-D. They gave the proposal an average weighted score of 150.7 out of 250 points. One reviewer recommended that the project be funded; one reviewer recommended funding to be considered, and one recommended it not be funded. Porter said that the Center for Air Toxics Metals is providing scientific information and expertise for the private and public sectors. As technical advisor to the LRC and NDIC, Porter recommended the project be funded, with the condition that NDIC funding for the project is subject to the annual identification of research projects and program costs by the CATM Advisory Council.

Porter said that the Energy & Environmental Research Center and Otter Tail Power are the conflict-of-interest parties for proposal LRC-XLIV-D.

Mike Jones of the Energy & Environmental Research Center gave a slide presentation in support of the proposal.

Wefald asked whether or not anyone from the lignite industry serves on the CATM Advisory Council in addition to Porter. Porter said that Terry Graumann of Otter Tail Power Company also serves on that advisory council.

**LRC-XLIV-F – “Mercury Control Options Evaluation Phase II Stanton Station”; Submitted by: Great River Energy; Principal Investigator: Ramsay Chang, Ph.D. (Electric Power Research Institute); Request for: \$80,000; Total Project Costs: \$220,000; Time Frame: 6 Months.**

Porter said that the goal of the proposal is to evaluate mercury (Hg) emission control options at Great River Energy’s Stanton Station. The grant request constitutes Phase II of the NDIC grant FY01-XXXVII-103 (“The Evaluation of Mercury Emissions and Control Options for Great River Energy”, and has an objective similar to the NDIC grant

FY01-XXXVIII-105 (“Pilot Scale Study of Mercury Oxidation Catalysts at Coal Creek Station, Underwood, North Dakota”). The proposed work for the Phase II study will test a version of the MerCap concept (regenerable gold plates) and will assess the potential to produce oxidized mercury by the addition of chemicals to coal feed or boiler. The MerCap technology may capture Hg in the flue gas stream, whereas the chemical additives could oxidize Hg<sup>0</sup> to Hg<sup>++</sup> and results in capture across the spray dryer baghouse.

Porter summarized the ratings and comments of the three technical peer reviewers for proposal LRC-XLIV-F. They gave the proposal an average weighted score of 189.3 out of 250 points. Three reviewers recommended that the project be funded; one reviewer recommended funding for Task 1 only. Porter said that cost-effective mercury control technologies are important to the North Dakota lignite industry, and that these projects should be encouraged. He said that the ERPI principal investigator for this proposal is outstanding and provides additional value for the project. Porter recommended that the proposal be funded.

Porter said that Great River Energy is the conflict-of-interest party for proposal LRC-XLIV-F.

Mark Strohfus of Great River Energy gave a slide presentation in support of the proposal.

#### **Clifford Porter Retirement**

John Dwyer said that a dinner will be held on December 17, 2001 at Radisson Inn, Bismarck, in honor of Clifford Porter’s retirement.

#### **Ballot results: LRC- XLIV-C, LRC-XLIV-D and LRC-XLIV-F**

Dwyer announced that the LRC voted as follows to recommend that the Industrial Commission approve funding of the three proposals:

**LRC-XLIV-C** (“Biomass Impacts on SCR Performance”; Submitted by: Energy & Environmental Research Center; Principal Investigator: Bruce Folkedahl, Ph.D.; Request for: \$120,000; Total Project Costs: \$400,000; Time Frame: 24 Months): **Fund: 20; Do Not Fund: 2.**

**LRC-XLIV-D** (“Center for Air Toxics Metals Affiliates Program – Continuation of Membership”; Submitted by: Energy & Environmental Research Center; Principal Investigator: John Pavlish; Request for: \$75,000; Total Project Costs: \$3,750,000; Time Frame: 36 Months): **Fund, with contingencies specified by the technical advisor (funding is subject to the annual identification of research projects and program costs by the CATM Research Advisory Council): 22; Do Not Fund: 0.**

**LRC-XLIV-F** (“Mercury Control Options Evaluation Phase II Stanton Station”; Submitted by: Great River Energy; Principal Investigator: Ramsay Chang, Ph.D. (Electric Power Research Institute); Request for: \$80,000; Total Project Costs: \$220,000; Time Frame: 6 Months): **Fund: 22; Do Not Fund: 0.**

The LRC’s recommendations for the three Grant Round XLIV proposals will be considered by the North Dakota Industrial Commission at its meeting on November 20, 2001.

#### **2002: Grant Application Deadline Dates; LRC Meetings**

Dwyer said that grant application deadline dates for 2002 are April 1 and October 1.

The next regularly scheduled meetings of the Lignite Research Council will be at 12:00 p.m. May 30, 2002 and 12:00 p.m. November 26, 2002, both at Doublewood Inn, Bismarck.

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#### **Adjournment**

There being no further business, the meeting adjourned.

Vicki Gilmore, Recording Secretary

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